Claims

1. Biomedical polyurethane based on diisocyanate linked polyester polymer and diol components, said diol component having a uniform block-length.

2. Biomedical polyurethane according to claim 1, having the following formula:

$$\{A\text{-}B\text{-}C\text{-}B\}_n$$

wherein the B denotes diisocyanate moieties, A denotes a polyester moiety, C denotes a diol moiety and n is the number of recurring units.

3. Biomedical polyurethane according to claim 1 or 2 consisting of repeating units of the following formula

$$\{C(O)\text{-}NH\text{-}R_1\text{-}NH\text{-}C(O)\text{-}O\text{-}D\text{-}O\text{-}C(O)\text{-}NH\text{-}R_1\text{-}NH\text{-}C(O)\text{-}O\text{-}E\text{-}O\}_n,$$

wherein R_1 is an n-butylene moiety, D is a polyester moiety, E is an n-butylene diol, an n-hexylene diol or a diethylene glycol based moiety and n indicates the number of repeating units.

4. Polyurethane according to claim 1-3, wherein E is diol or an XYX reaction product of diol (X) and 1,4-butane-diisocyanate (Y).

5. Polyurethane according to claim 1-4, wherein the blocklength is the same for at least 90%, more in particular at least 98% of the diol units.

6. Polyurethane according to claim 1-5, wherein the polyester is based on a polyester prepared by ringopening polymerisation, preferably a random copolyester.

7. Polyurethane according to claim 6, wherein the random copolyester is a copolyester of lactide, glycolide, trimethylene carbonate and/or ε-caprolacton.

8. Polyurethane according to claim 1-6, wherein the polyester is based on lactic acid, succinic acid, diethylene glycol, 1,4-butanediol, 1,6-hexanediol and/or diethylene glycol.

9. Polyurethane according to claim 1-8, obtainable by a process comprising reacting the polyester and an isocyanate endcapped diol component, the ratio of polyester endgroups to isocyanate groups being at least two, followed by reacting the resulting prepolymer with water.

10. Polyurethane according to claim 7, based on a copolyester of lactide and ε-caprolacton containing 5 to 95, preferably 40-60 % of units of lactide and 5 to 95, preferably 40-60 % of units of ε-caprolacton, based on number.

11. 1,4-Butanediol, 1,6-hexane diol, or diethyleneglycol based diol component having a uniform blocklength, said component being an XYX reaction product of diol (X) and 1,4-butane-diisocyanate (Y).

12. Process for the preparation of a biomedical polyurethane according to claim 1-9 or 11, wherein the diol component is reacted with the reaction product of at least two moles of diisocyanate and the polyester.

13. Process for the preparation of a biomedical polyurethane according to claim 1-9 or 11, wherein the random copolymer is reacted with the reaction product of at least two moles of diisocyanate and the diol component.

14. Implants based on the biomedical polyurethanes according to claim 1-10, having a porosity of 50 to 99 vol.%.

15. Use of a polyurethane according to claim 1-10, as biodegradable polymer implant in meniscus reconstruction.

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Claim 16

16. Biomedical polyurethane having a phase separated morphology, comprising soft segments of polyester and/or polyether components and hard segments, said hard segments consisting of a diol component having a uniform block length, and wherein the diol component on the one hand and the polyester and/or polyether components on the other hand, have been linked by diisocyanate, preferably an aliphatic diisocyanate.